

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE PCT NATIONAL STAGE APPLICATION OF:
CORNES, ET AL.
Intl. Appln. No.: PCT/GB2004/002409
IA Filing Date.: June 7, 2004
U.S. Appln No.: 10/560,097
§ 371 Date: April 3, 2006
For: METHOD OF CONTROLLING WEEDS

Art Unit: 1616
Examiner: Brooks, Kristie Latrice
Conf. No. 1174

Mail Stop Appeal Brief - Patents
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Appellants submit herewith an Appeal Brief in furtherance of the Notice of Appeal, filed in this case on June 22, 2009. This Brief is timely if filed by October 22, 2009 upon grant of an extension of time of two (2) months.

Appellants enclose herewith the fee required under 37 C.F.R. 41.20(b)(2), the required petition for extension of time for filing this brief and fees therefore. Accordingly, Appellants enclose a credit card authorization for all requisite fees. Appellants authorize the Commissioner to charge any additional fees that are due or credit any overpayments to Deposit Account No. 50-1676 in the name of Syngenta Crop Protection, Inc.

Respectfully submitted,

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Date: Friday, October 09, 2009

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Syngenta Crop Protection, Inc.

II. RELATED APPEALS AND INTERFERENCES

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal, there are no such appeals or interferences.

III. STATUS OF CLAIMS

The status of the claims in this application is:

Claims 1 – 18 were originally presented.

Claims 16 – 17 were canceled.

Claims 1 – 15 and 18 are in the application.

Claims 1 – 15 and 18 have been rejected.

The claims on appeal are 1 – 15 and 18.

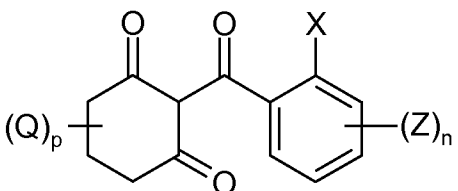
IV. STATUS OF AMENDMENTS

The response dated April 22, 2009 filed subsequent to the January 22, 2009 final rejection has been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The subject matter of the instant claims is provides a method for the season-long control of unwanted vegetation, said method comprising a single application of a herbicidal combination comprising a 2-(substituted benzoyl)-1,3-cyclohexanedione or metal chelate thereof, glyphosate or a salt thereof and an acetamide to the locus of said unwanted vegetation.

The claimed subject matter is:

<u>Claim</u>	<u>Specification Support</u>
1. A method for the season-long control of unwanted vegetation, said method comprising a single post-emergence application of a herbicidal combination comprising a 2-(substituted benzoyl)-1,3-cyclohexanedione or metal chelate thereof, glyphosate or a salt thereof and an acetamide.	Page 1, lines 32 – 34, to page 2, lines 1 – 2.
2. A method according to claim 1 wherein the 2-(substituted benzoyl)-1,3-cyclohexanedione is a compound of formula (I) <div style="text-align: center;">  <p>(I)</p> </div> <p>wherein X, Z, Q, p and n are as defined in the specification.</p>	Page 2, lines 11 – 30, to page 3, lines 1 – 14.
3. A method according to claim 2, wherein X is chloro, bromo, nitro, cyano, C ₁ -C ₄ alkyl, -CF ₃ , -S(O) _m R ¹ , or -OR ¹ ; each Z is independently chloro, bromo, nitro, cyano, C ₁ -C ₄ alkyl, -CF ₃ , -OR ¹ , -OS(O) _m R ⁵ or -S(O) _m R ⁵ ; n is one or two; and p is zero, one or two.	Page 3, lines 15 – 17.

<p>4. A method according to claim 3, wherein the 2-(substituted benzoyl)-1,3-cyclohexanedione of formula (I) is selected from the group consisting of 2-(2'-nitro-4'-methylsulphonylbenzoyl)-1,3-cyclohexanedione, 2-(2'-nitro-4'-methylsulphonyloxybenzoyl)-1,3-cyclohexanedione, 2-(2'-chloro-4'-methylsulphonylbenzoyl)-1,3-cyclohexanedione, 4,4-dimethyl-2-(4-methanesulphonyl-2-nitrobenzoyl)-1,3-cyclohexanedione, 2-(2-chloro-3-ethoxy-4-methanesulphonylbenzoyl)-5-methyl-1,3-cyclohexanedione and 2-(2-chloro-3-ethoxy-4-ethanesulphonylbenzoyl)-5-methyl-1,3-cyclohexanedione.</p>	<p>Page 3, lines 18 – 25.</p>
<p>5. A method according to claim 1, wherein the acetamide is a chloroacetamide or an oxyacetamide.</p>	<p>Page 4, lines 5 – 6.</p>
<p>6. A method according to claim 5, wherein the chloroacetamide is a compound of formula (II)</p> <div data-bbox="196 1108 561 1331" data-label="Chemical-Block"> <p style="text-align: center;">(II)</p> </div> <p>wherein A, R⁷, R⁸, R⁹, and R¹⁰ are as defined in the specification.</p>	<p>Page 4, lines 7 – 14.</p>
<p>7. A method according to claim 6, wherein A is CH=CH; R⁷ is hydrogen, methyl or ethyl; R⁸ is hydrogen, methyl or ethyl; R⁹ is hydrogen or methyl; R¹⁰ is methyl, -OCH₃, -CH₂OCH₃, -OCH₂CH₃, -CH₂OCH₂CH₂CH₃, -OCH(CH₃)₂, or -OCH₂CH₂CH₂CH₃.</p>	<p>Page 4, lines 15 – 17.</p>
<p>8. A method according to claim 7, wherein the</p>	<p>Page 4, lines 18 – 19.</p>

chloroacetamide is selected from the group consisting of metolachlor, acetochlor and alachlor.	
9. A method according to claim 8, wherein the chloroacetamide is s-metolachlor.	Page 4, line 19.
10. A method according to claim 6, wherein A is S; R ⁷ , R ⁸ and R ⁹ are methyl; and R ¹⁰ is methoxymethyl.	Page 4, lines 20 – 21.
11. A method according to claim 5, wherein the oxyacetamide is a compound of formula (III) <div style="text-align: center;"> <p>(III)</p> </div> wherein R ¹¹ , R ¹² and R ¹³ are defined in the specification.	Page 4, lines 22 – 24, to page 5, lines 1 – 3.
12. A method according to claim 11, wherein R ¹¹ is methyl or isopropyl; R ¹² is hydrogen or fluoro.	Page 5, line 4.
13. A method according to claim 12, wherein the oxyacetamide is flufenacet or mefenacet.	Page 5, lines 5 – 6.
14. A method according to claim 13, wherein the oxyacetamide is flufenacet.	Page 5, line 6.
15. A method according to claim 1, wherein the combination further comprises one or more additional active ingredients.	Page 5, lines 25 – 27.
18. A herbicidal composition comprising a 2-(substituted benzoyl)-1,3-cyclohexanedione or metal chelate thereof, glyphosate or a salt thereof and an acetamide, provided that (i) when the 2-(substituted benzoyl)-1,3-	Page 6, lines 25 – 32.

<p>cyclohexanedione is mesotrione, then the acetamide is not metolachlor, acetochlor, alachlor or dimethenamide, and (ii) when the acetamide is dimethenamide, then the 2-(substituted benzoyl)-1,3-cyclohexanedione is not 2-(2-chloro-4-methanesulfonylbenzoyl)-1,3-cyclohexanedione or 2-(4-methylsulfonyloxy-2-nitrobenzoyl)-4,4,6,6-tetramethyl-1,3-cyclohexanedione.</p>	
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VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

I. Whether claims 1 – 6, 10, 15 and 18 are unpatentable under 35 U.S.C. § 103(a) as being obvious over US patent 5,716,901 to Fenderson et al. (Fenderson) in view of Banks et al, “Glyphosate as a Postemergence Treatment for Johnsongrass Control in Cotton and Soybeans”, American Society of Agronomy, 69:579-582, 1977, Abstract.

II. Whether claims 1, 5 11-14 and 18 are unpatentable under 35 U.S.C § 103(a) as being obvious over US patent 6,365,550 to Feucht et al. (Feucht) in view of Armel et al., “Mesotrione, Acetochlor and Arazine for Weed Management in Corn”, Weed Technology, Vol. 17:284-290, 2003 (Armel).

III. Whether claims claims 1-9, 15 and 18 are unpatentable under 35 U.S.C § 103(a) as being obvious over US patent 5,981,432 to Hudetz et al. (Hudetz).

VII. ARGUMENTS

I. Whether claims 1 – 6, 10, 15 and 18 are unpatentable under 35 U.S.C. § 103(a) as being obvious over US patent 5,716,901 to Fenderson et al. (Fenderson) in view of Banks et al, “Glyphosate as a Postemergence Treatment for Johnsongrass Control in Cotton and Soybeans”, American Society of Agronomy, 69:579-582, 1977, Abstract.

35 USC §103(a) states:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

With respect to Fenderson, the Examiner suggests that one of ordinary skill in the art would have been motivated to substitute glyphosate into the 3-way formulation taught by Fenderson. Appellants dispute this suggestion.

More specifically, Fenderson teaches, *inter alia*, a herbicide composition comprising dimethenamid and at least one other herbicide (column 1, line 17-18). Fenderson provides substantial boilerplate of examples of possible other herbicides – column 2 lines 6 to column 3 line 30 – which includes reference to triketones (column 2, line 11). Fenderson goes on to teach that the co-application of the combination of dimethenamid and triketone(s) or dione(s) according to the present invention is especially suitable in crops of monocotyledons, such as cereals, maize and rice (column 6 lines 52-55). Example 4 teaches a maize field, infested with various weed species, which is sprayed with a tank-mix suspension of dimethenamid, sulcotrione and atrazine.

Thus, it can be seen from the teaching of Fenderson that three way mix of dimethenamid, a triketone and atrazine is actually only envisaged with regard to (selective) weed control in monocotyledon crops. One of ordinary skill would understand this to be the case as each of the three herbicidal components are known selective herbicides used to control weeds in, for example, maize – as supported by the specific example provided by Fenderson.

Banks, on the other hand, teaches glyphosate as a post-emergence treatment for Johnsongrass control in cotton and soybeans. Treatments were made either “over-the-top” (topical) of the crop plants or directed to the base of the stems. However, Banks further teaches that “glyphosate at 0.8 kg/ha used postemergence topically on cotton and soybeans caused significant visual injury (emphasis added) and crop yield reduction”. Banks indicates that crop damage could be reduced if glyphosate was applied basally to the stem.

As mentioned above - the Examiner suggest that one of ordinary skill in the art would have been motivated to substitute glyphosate (for atrazine) into the exemplified 3-way formulation taught by Fenderson.

However, it should be appreciated that Fenderson and Banks relate to completely different problems. More particularly, Fenderson is concerned with methods for controlling weeds in monocotyledon crops such as corn – which is solved by post-emergence “over the top” application of a three way mix of corn selective herbicides. Banks is concerned with methods of controlling weeds in a dicotyledon crops such soybean and cotton – which is solved using basal application of a non-selective herbicide (glyphosate).

Accordingly, it is submitted that contrary to the Examiner’s assertion – the person of ordinary would not be motivated to substitute glyphosate for atrazine in the combination taught by Fenderson in view of Banks as the two references relate to different problems. In addition – it should be appreciated that Fenderson teaches a tank-mix (over the top) application of the herbicidal composition. However – Banks teaches that over the top applications of glyphosate results in significant visual injury of the crop plant. Thus – Banks actually teaches away from the solution offered by the present invention – and it is submitted that one of ordinary skill would have no reasonable expectation that glyphosate could be substituted for atrazine in the combination taught by Fenderson because – in doing so – Banks would suggest injury to the crop plant would result.

Accordingly – in view of the above analysis it is submitted that the present invention is not *prima facie* obvious in view of the teachings of Fenderson in view of Banks. Reconsideration and withdrawal of the § 103 rejection of claims 1 – 6, 10, 15 and 18 are respectfully requested.

II. Whether claims 1, 5 11-14 and 18 are unpatentable under 35 U.S.C § 103(a) as being obvious over US patent 6,365,550 to Feucht et al. (Feucht) in view of Armel et al., “Mesotrione, Acetochlor and Arazine for Weed Management in Corn”, Weed Technology, Vol. 17:284-290, 2003 (Armel).

The Examiner suggests that Feucht teaches a synergistic herbicidal composition comprising a combination of flufenacet and glyphosate, for weed control. Feucht provides an example of a post emergence greenhouse test wherein the combination of glyphosate and flufenacet is applied to weeds. Notwithstanding that one of ordinary skill may consider the reported results to be “questionable” (insofar as the glyphosate treatment alone – which would normally damage these species – does not appear to confer any damage) it can be seen that the combination – even when

tested under ideal greenhouse conditions (rather than the more harsh environment of an actual corn field) – did not provide complete control of the weed species tested.

As the Examiner points out - Feucht does not teach a 2-(substituted benzoyl)-1,3-cyclohexanedione or metal chelate. However, this deficiency, the Examiner suggests, can be cured by the teachings of Armel. More particularly, the Examiner suggests that one of ordinary skill in the art would have been motivated to incorporate a 2-(substituted benzoyl)-1,3-cyclohexanedione into the formulation by Feucht because mesotrione is known for post-emergence application to crops for the control of weeds.

However –the present claims are drawn to a method for the season-long control of unwanted vegetation, said method comprising a single post-emergence application of a herbicidal combination - rather than to the combination per se.

It should be appreciated that - Armel – while referring to 2-(substituted benzoyl)-1,3-cyclohexanedione (mesotrione) – does not envisage a single post-emergence application of mesotrione. In all cases Armel requires a pre-emergence application of mesotrione (or another herbicide) in order to control the weeds. Indeed the teaching of Armel clearly suggests that effective weed control requires both pre- and post- application of mesotrione (see e.g abstract final sentence). Thus – Armel does not any specific and unambiguous teaching with respect to a method of weed control comprising a single post emergence application of a herbicidal combination comprising mesotrione.

Accordingly, even if one of ordinary skill combined the teachings of Feucht and Armel in the manner suggested by the Examiner, the method of the present invention would not be arrived at. Furthermore, it is clear that the data provided in the specification with regard to the present invention clearly shows that the method of the present invention provides more effective season-long weed control.

Accordingly, Appellants respectfully submit that the method of the present invention is not *prima facie* obvious in view of the combined teachings of Feucht and Armel. Reconsideration and withdrawal of such § are respectfully requested.

III. Whether claims 1-9, 15 and 18 are unpatentable under 35 U.S.C § 103(a) as being obvious over US patent 5,981,432 to Hudetz et al. (Hudetz).

Hudetz only exemplifies using pre-emergence treatment (Example B2) and pre- and post-emergence treatment (Example B3). No specific exemplification is provided in respect of a post-

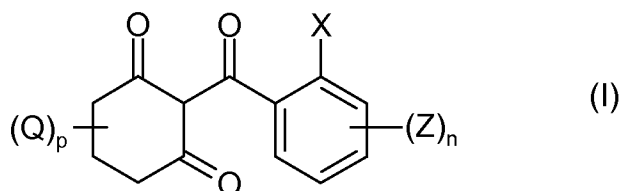
treatment (only generalized teaching in B1). Moreover – none of the specific examples provided teach a combination comprising a 2-(substituted benzoyl)-1,3-cyclohexanedione, glyphosate or a salt thereof and an acetamide. Accordingly, while the individual herbicidal components may be referred to by Hudetz – there is no teaching or suggestion of the 3-way combination. Such a combination is clearly only apparent following an improper hindsight reconstruction of the invention based on the disclosure of Hudetz. Furthermore, Hudetz clearly motivates a pre- or post- + pre-emergence application (as opposed to a post-emergence application alone) – and certainly does not envisage a method for season long weed control comprising a single post-emergence application.

Accordingly, reconsideration and withdrawal of the § 103 rejection of claims 1-9, 15 and 18 as being *prima facie* obviousness in view of Hudetz are requested; the rejection is based on an improper hindsight reconstruction of the prior art.

In view of the above arguments, Appellants respectfully submit that the rejections under 35 U.S.C. § 103(a) has been overcome and hereby request that this application be passed to issue.

VIII. CLAIMS APPENDIX

1. (Previously presented): A method for the season-long control of unwanted vegetation, said method comprising a single post-emergence application of a herbicidal combination comprising a 2-(substituted benzoyl)-1,3-cyclohexanedione or metal chelate thereof, glyphosate or a salt thereof and an acetamide.
2. (Original): A method according to claim 1 wherein the 2-(substituted benzoyl)-1,3-cyclohexanedione is a compound of formula (I)



wherein X represents a halogen atom; a straight- or branched-chain alkyl or alkoxy group containing up to six carbon atoms which is optionally substituted by one or more groups –OR¹ or one or more halogen atoms; or a group selected from nitro, cyano, –CO₂R², –S(O)_mR¹, –O(CH₂)_rOR¹, –COR², –NR²R³, –SO₂NR²R³, –CONR²R³, –CSNR²R³ and –OSO₂R⁴; R¹ represents a straight- or branched-chain alkyl group containing up to six carbon atoms which is optionally substituted by one or more halogen atoms;

R² and R³ each independently represents a hydrogen atom; or a straight- or branched-chain alkyl group containing up to six carbon atoms which is optionally substituted by one or more halogen atoms;

R⁴ represents a straight- or branched-chain alkyl, alkenyl or alkynyl group containing up to six carbon atoms optionally substituted by one or more halogen atoms; or a cycloalkyl group containing from three to six carbon atoms;

each Z independently represents halo, nitro, cyano, S(O)_mR⁵, OS(O)_mR⁵, C₁₋₆ alkyl, C₁₋₆ alkoxy, C₁₋₆ haloalkyl, C₁₋₆ haloalkoxy, carboxy, C₁₋₆ alkylcarbonyloxy, C₁₋₆ alkoxy carbonyl, C₁₋₆ alkylcarbonyl, amino, C₁₋₆ alkylamino, C₁₋₆ dialkylamino having independently the stated number of carbon atoms in each alkyl group, C₁₋₆ alkylcarbonylamino, C₁₋₆ alkoxy carbonylamino, C₁₋₆ alkylaminocarbonylamino, C₁₋₆ dialkylaminocarbonylamino having independently the stated number of carbon atoms in each alkyl group, C₁₋₆ alkoxy carbonyloxy, C₁₋₆ alkylaminocarbonyloxy, C₁₋₆ dialkylcarbonyloxy, phenylcarbonyl, substituted phenylcarbonyl, phenylcarbonyloxy, substituted phenylcarbonyloxy, phenylcarbonylamino, substituted phenylcarbonylamino, phenoxy or substituted phenoxy; R⁵ represents a straight or branched chain alkyl group containing up to six carbon atoms;

each Q independently represents C₁₋₄ alkyl or -CO₂R⁶ wherein R⁶ is C₁₋₄ alkyl;

m is zero, one or two;

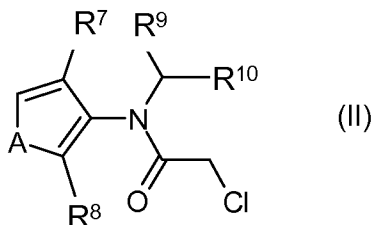
n is zero or an integer from one to four;

r is one, two or three; and

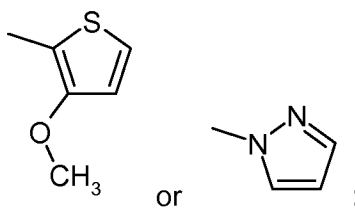
p is zero or an integer from one to six

and any agriculturally acceptable metal chelate thereof formula (II).

3. (Original): A method according to claim 2, wherein X is chloro, bromo, nitro, cyano, C₁-C₄ alkyl, -CF₃, -S(O)_mR¹, or -OR¹; each Z is independently chloro, bromo, nitro, cyano, C₁-C₄ alkyl, -CF₃, -OR¹, -OS(O)_mR⁵ or -S(O)_mR⁵; n is one or two; and p is zero, one or two.
4. (Original): A method according to claim 3, wherein the 2-(substituted benzoyl)-1,3-cyclohexanedione of formula (I) is selected from the group consisting of 2-(2'-nitro-4'-methylsulphonylbenzoyl)-1,3-cyclohexanedione, 2-(2'-nitro-4'-methylsulphonyloxybenzoyl)-1,3-cyclohexanedione, 2-(2'-chloro-4'-methylsulphonylbenzoyl)-1,3-cyclohexanedione, 4,4-dimethyl-2-(4-methanesulphonyl-2-nitrobenzoyl)-1,3-cyclohexanedione, 2-(2-chloro-3-ethoxy-4-methanesulphonylbenzoyl)-5-methyl-1,3-cyclohexanedione and 2-(2-chloro-3-ethoxy-4-ethanesulphonylbenzoyl)-5-methyl-1,3-cyclohexanedione.
5. (Previously presented): A method according to claim 1, wherein the acetamide is a chloroacetamide or an oxyacetamide.
6. (Original): A method according to claim 5, wherein the chloroacetamide is a compound of formula (II)

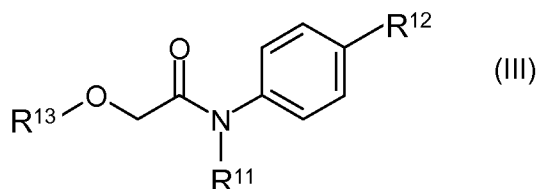


wherein R⁷ is hydrogen, methyl or ethyl; R⁸ is hydrogen, methyl or ethyl; R⁹ is hydrogen or methyl; R¹⁰ is methyl, -OCH₃, -CH₂OCH₃, -OCH₂CH₃, -CH₂OCH₂CH₂CH₃, -OCH(CH₃)₂, -OCH₂CH₂CH₂CH₃ or a group

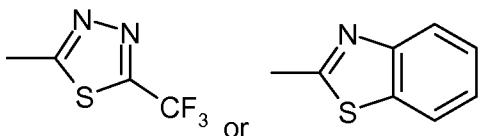


and A is S or CH=CH.

7. (Original): A method according to claim 6, wherein A is CH=CH; R⁷ is hydrogen, methyl or ethyl; R⁸ is hydrogen, methyl or ethyl; R⁹ is hydrogen or methyl; R¹⁰ is methyl, -OCH₃, -CH₂OCH₃, -OCH₂CH₃, -CH₂OCH₂CH₂CH₃, -OCH(CH₃)₂, or -OCH₂CH₂CH₂CH₃.
8. (Original): A method according to claim 7, wherein the chloroacetamide is selected from the group consisting of metolachlor, acetochlor and alachlor.
9. (Original): A method according to claim 8, wherein the chloroacetamide is s-metolachlor.
10. (Original): A method according to claim 6, wherein A is S; R⁷, R⁸ and R⁹ are methyl; and R¹⁰ is methoxymethyl.
11. (Original): A method according to claim 5, wherein the oxyacetamide is a compound of formula (III)



wherein R¹¹ is hydrogen, methyl, ethyl, propyl or isopropyl; R¹² is hydrogen or halo; and R¹³ is a group



12. (Original): A method according to claim 11, wherein R¹¹ is methyl or isopropyl; R¹² is hydrogen or fluoro.

13. (Original): A method according to claim 12, wherein the oxyacetamide is flufenacet or mefanacet.
14. (Original): A method according to claim 13, wherein the oxyacetamide is flufenacet.
15. (Previously presented): A method according to claim 1, wherein the combination further comprises one or more additional active ingredients.
16. (Cancelled)
17. (Cancelled).
18. (Original): A herbicidal composition comprising a 2-(substituted benzoyl)-1,3-cyclohexanedione or metal chelate thereof, glyphosate or a salt thereof and an acetamide, provided that (i) when the 2-(substituted benzoyl)-1,3-cyclohexanedione is mesotrione, then the acetamide is not metolachlor, acetochlor, alachlor or dimethenamide, and (ii) when the acetamide is dimethenamide, then the 2-(substituted benzoyl)-1,3-cyclohexanedione is not 2-(2-chloro-4-methanesulfonylbenzoyl)-1,3-cyclohexanedione or 2-(4-methylsulfonyloxy-2-nitrobenzoyl)-4,4,6,6-tetramethyl-1,3-cyclohexanedione.

IX. EVIDENCE APPENDIX

None

X. RELATED PROCEEDINGS APPENDIX

None

Respectfully submitted,

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Date: September 22, 2009